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Triples in table tennis: A promising new team competition sport - "Introduction and first findings"

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Some salient points from a comprehensive textbook on “Table Tennis Triples”, covering the rationale for the new game, its equipment, rules, game plans, umpiring, and possible integration into existing table tennis events [1] are presented. A general introduction to Triples and its rationale is given, focusing on its theoretical basis and rules. Some first evaluation trials are discussed, as is the possible integration of Triples into existing events.

The basic change from conventional table tennis is that Triples is played preferably, but not exclusively, on a circular table, and that net height increases towards the table periphery. Consistent with recent rule changes in table tennis, and apart from its novelty, the Triples game offers major benefits. Compared to the conventional game these include the whole team playing at once, a larger table playing area, increases in ‘baseline length’ and player movement space, and a greater range of shot directions and lengths.

Triples is based on a clearly structured game plan. Its basic rules are those of conventional table tennis, accompanied by some new features firstly necessitated by the simultaneous interaction of three players, but secondly also designed to progressively increase player, spectator and media excitement and appeal.

All aspects of the new game were successfully tested in trials with prototype equipment, using top pennant competition players. Players overwhelmingly accepted all rules, and felt comfortable in their new team roles, suggesting that the team-oriented Triples game has major potential.

Disciplines

Engineering | Science and Technology Studies

Publication Details

Triples in Table Tennis: a Promising New Team Competition Sport – *Introduction and First Findings*. Proc 10th ITTF Sports Science Congress, Zagreb: 444-462.

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TRIPLES IN TABLE TENNIS: A PROMISING NEW TEAM COMPETITION SPORT - "Introduction and First Findings"

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Key words: *Team competition, Table tennis innovation, New 'Triples' sport, New rules, Equipment design, Team psychology & tactics, Event management, ITTF support, Global acceptance testing.*

1. Introduction

Ever since the first congress of the International Table Tennis Federation (ITTF, on 12.12.1926) the boundaries of table tennis have been pushed out further and further. The evolution from singles to doubles to "Triples" is seen as a natural part thereof. The latter has so far not happened primarily because the technical means to do so did not exist. Following extensive research and development the author has succeeded in overcoming that hurdle, as described in a comprehensive textbook covering the theory, equipment, rules, strategies and future possibilities of this new form of table tennis as played by 3-person teams [1], and based on his earlier invention of, and work with the circular table tennis table [2-9].

The timing of that book coincides with yet another stepping stone in table tennis history, namely the decision to include table tennis TEAM events into the next Olympic Games in 2008 - with teams consisting of three players. This is also very common among existing table tennis team competitions, collectively representing the major part of the international table tennis repertoire, with teams typically consisting of 3 to 6 players.

1.1 Rationale

Why Triples in Table Tennis?

To let three people experience the thrills of team interaction while playing the fastest sport on earth - as a real team.

Table tennis "Team Competitions" today are actually played as a combination of singles and doubles matches. However, one basic feature of sporting team games is that *all* players play the game *at once*. So far table tennis teams do not, with the exception of doubles matches, as the most rudimentary example of a "team" (which, according to the *Oxford Dictionary*, consists of "two or more persons working together"). Doubles in table tennis therefore qualifies as a "team game", but strictly speaking all present table tennis "team" competitions, with their mixture of singles and doubles matches, do not.

Moreover, the ongoing "World *Team* Rankings" in table tennis are based on the ranking points of the three highest ranked players in each association/country – without them ever having played each other *as a team*: the term "team ranking" is actually a misnomer. It would be more appropriate and desirable to replace, or at least complement, the present accumulation of individual player contributions by an event which tests the true *combined strength* of the team. Only then can all the special attributes of sporting teams truly come to bear. - Adding up individual players' contributions to arrive at an overall team score may obviously be *representative* of *combined* team strength. But this method lacks the ultimate test, and that certain "spark" and magnetism which only interactive full-team engagement can deliver, and which make "real" team games so attractive to spectators.

Table Tennis Triples was conceived to provide an answer to these shortcomings. It has the potential to raise the image of table tennis from a sport *essentially* dominated by individuals to that of a real team sport. - The primary purpose of this paper is to substantiate that claim, by outlining the major features of, and first experiences with Triples. And secondly, it is hoped that it will incite the table tennis world – players, coaches, organisers and administrators alike –to try out the new game.

2. Triples Geometry

Table tennis Triples is played by two teams of 3 players. In order to create the extra space needed to accommodate these 6 people a circular table is used (although other shapes are possible [1]), as is a single net. The notation and terms shown in Figure 1 will be used to explain the game. Team A plays team B. Each team has players numbered 1, 2 and 3. Both playing fields consist of three 60-degree sectors: a "Centre Court" CC and two outside courts, the "Right Wing", RW, and "Left Wing", LW. Their boundaries are defined by the net and the diagonal Right and Left "Triples Lines", respectively.

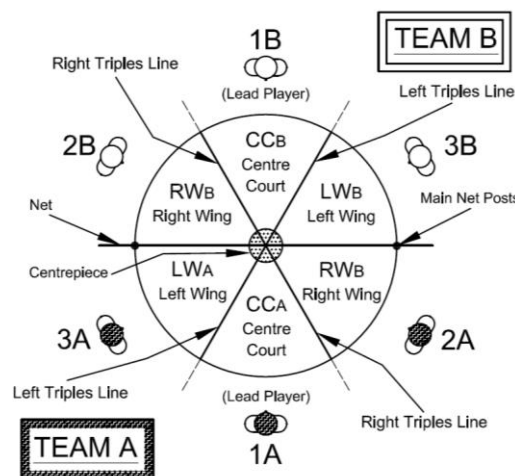


Figure 1: Triples Terminology

(Player positions 1,2,3 shown are those at the start of a Triples game).

Before explaining the rules and scoring system necessary to achieve the practical implementation of Triples, its advantages in terms of player movement will be briefly investigated.

2.1 Edge Length

The diameter of the "standard" Triples table is 3.14 metres, corresponding to the diagonal of the conventional table, i.e. it envelops the latter as a circumscribed circle. Other sizes are possible, but not recommended [1]. This means that it is effectively 40cm "longer" (in all directions) than the conventional table, and results in a peripheral "playing edge" or baseline length of 4.935m, i.e. 3.23 times the conventional 1.525m, and an "edge length per player", or sector, of 1.645m, an increase of 8%. It may therefore be argued that from the viewpoint of pure baseline length allocation per singles player alone, and under playing conditions equivalent to those of the conventional *singles* game, the number of players on one table may be logically increased by a factor of 3, to six: two Triples teams.

2.2 Playing Area

This argument becomes even more convincing when considering areas. The overall playing area of the 3.14m diameter table is 85% larger than the conventional table area. Collectively this means that players have that much more "target area" to play to, thereby allowing them to move further back from the table than in the conventional game, if necessary, and still "hit the target". Each 60-degree sector area for the 3.14m Triples table is 1.29m², i.e. 23% bigger than the conventional doubles court area, of 1.05m². Hence from the point of view of "surface area per player", Triples play may be considered rather "better" than doubles play in conventional table tennis.

2.3 Player Action Space

The other intrinsic advantage of play on the round table is that the 'Action Space' *behind* the table increases with the square of the distance away from it ($A \propto r^2$), i.e. players have a larger area available in which to move than with the conventional table. There the predominantly "one-dimensional" nature of the game effectively only results in a corresponding linear increase in action space. For comparison, Figure 2 shows a hypothetical half-conventional and half-Triples table with single and double conventional competition court size boundaries of 14x7m and 14x14m, respectively, together with the "typical" floor areas - or action spaces - in which an individual player would reasonably be expected to move during a game. The overall "extreme" region areas shown are 30.4m² for (doubles) conventional table tennis, and 84.2m² for Triples, an increase of $M_T/M_C = 2.8$, again approaching a factor of 3.

As will be seen later, the rules of Triples allow a player to *stay and continue playing from* far behind the table, while the other two team members "cover up" for her/him close to the table. The opportunity is therefore created for a revival of the "lost art" of long-distance shots and its spectator appeal, (e.g. shots returned from 6m behind the table...). This has also been one of the aims of the so-called "Longer-Reach Team Play Format" involving 2 standard tables, which in that regard is somewhat similar to Triples [10]. The alternating play rule in doubles effectively restricts the action space of each player. No such limitation exists in Triples, which incorporates a fundamental change in the "order of play" rule, aimed at allowing the players and team more freedom in movement and strategy. Apart from the return of service, any one member of the team can return the ball. Hence each player can theoretically play from anywhere inside the 180-degree space available. Practical considerations limit this approximately to the individual 90-degree spaces indicated as M_1 , M_2 and M_3 in Fig. 2, together with their "nominal" counterparts defined by the Triples lines N_1 , N_2 and N_3 .

From a geometrical viewpoint it can therefore be concluded that

- Triples allows an *edge length* per player *equal* to that in the conventional game,
- Triples allows *stroke directions* virtually extending through a full 180 degrees,
- Triples offers a greater "*action space*" per player than that typically feasible in singles or doubles games on the conventional rectangular table,
- Triples allows the reappearance of *long-distance shots* and -play in competitive table tennis.
- The extra Triples table "length" allows up to 15% more *decision time* for players to react than in conventional table tennis.
- Triples allows a wide range of "*shot lengths*", - from 9cm to around 9 metres.

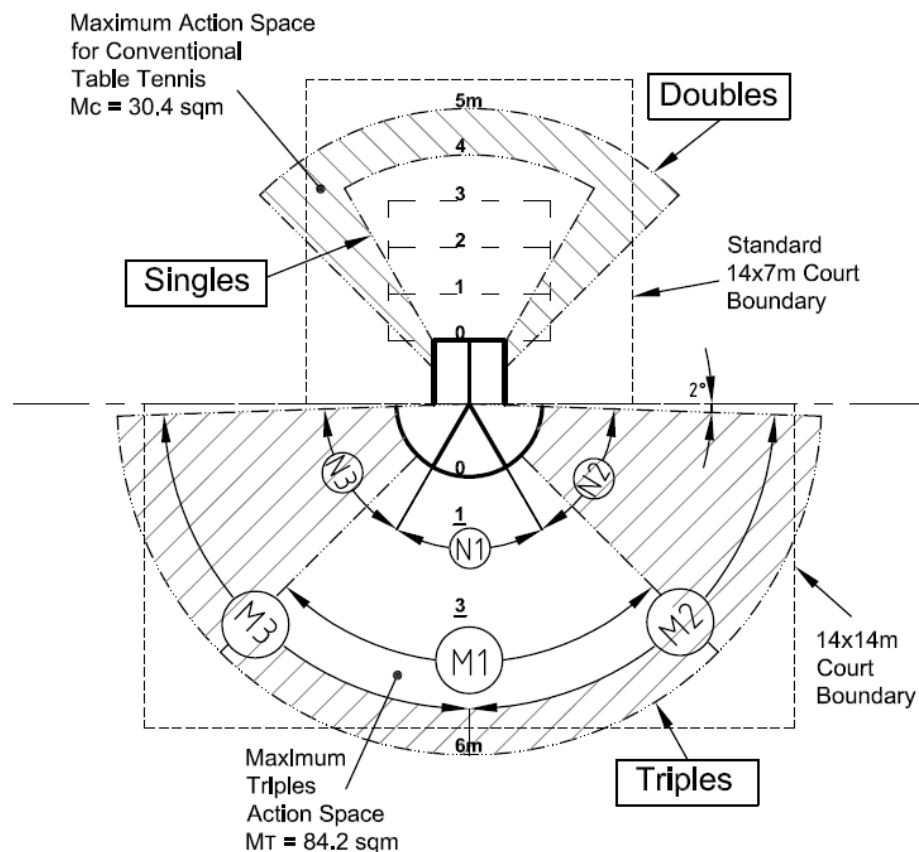


Figure 2: Comparison of Doubles and Triples Team Action Spaces

Clearly the actual court for competitive Triples has to be larger than the 14x7m standard size. Various solutions are possible [1], the most convenient and easily achievable being two standard courts side by side, i.e. 14x14 metres, as indicated in Figure 2.

3. Triples Equipment

Apart from conventional table tennis rackets and balls, the three basic "equipment elements" of the Triples game are the table, the "Centrepiece", and the net assembly. Each of these must conform to the boundaries set by the basic geometry and other physical requirements of Triples. The materials and general manufacturing and quality parameters must be identical to those of conventional table tennis. However, within these boundaries various design possibilities exist for each of the three elements, as described elsewhere [1]. Only their generic parameters will be described here.

3.1 The Table

Triples tables have been constructed according to three distinct designs, each of which has its particular advantages: in two folding halves as are most conventional tables, as a "Composite Table" by adding removable extension leaves to the conventional table, and as a "Modular Table" consisting of 6 interconnected 60° modules. The table has a 2cm white "perimeter line" and two 1cm-wide "Triples Lines" as shown in Figure 1.

3.2 The "Centrepiece"

Since the Triples table is 40cm 'longer' than the conventional table, a shallow conical disc 40cm diameter and 31mm high is located at the centre, as shown in Figure 3. It has two functions. Firstly, to prevent balls coming to rest "irretrievably" at the centre of the table, and secondly to effect an angled rebound for balls landing within the central region – a new challenge for table tennis players.

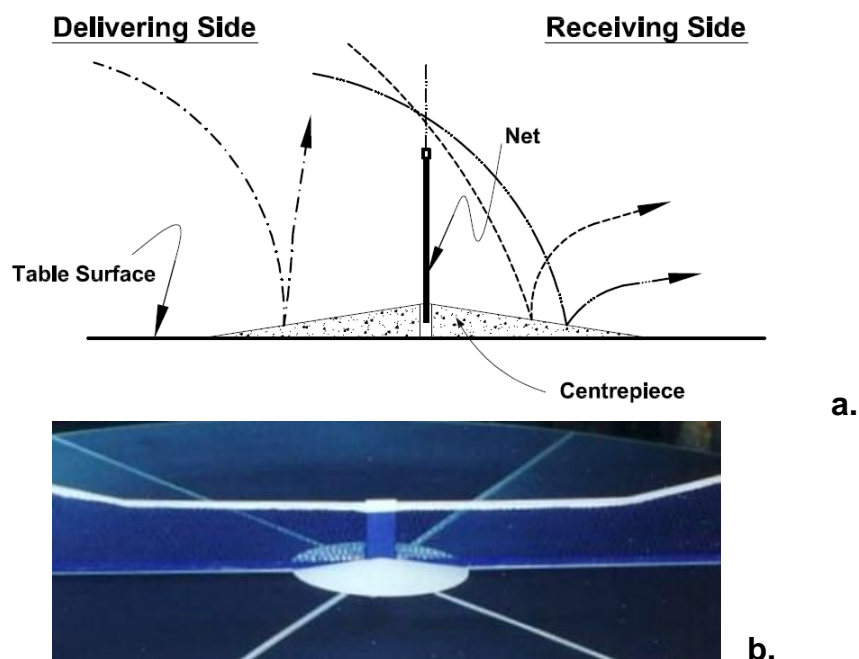


Figure 3: The Triples "Centrepiece" (PATENT APPLIED FOR)

- a. Effect of cone angle on ball rebound
- b. 40cm diameter Centrepiece with net joint cover

The surface of the Centrepiece is part of the playing area and must therefore have the same bounce characteristics as the parent table. Its cone angle has been chosen such that any balls landing on it can still be reasonably played/returned.

3.3 The Triples Net

As for the conventional table, the Triples net, shown in Figure 4, is arranged over the parting line between the two table halves, and follows the same colour scheme. Over the central third (1.05m) of its length it has the same height as the conventional net, i.e. 15.25cm. Obviously it would be very easy for the players in the wing courts to smash the ball into the adjacent opposite court if the net was the same height along all of its length, thereby creating a completely impractical situation. For this reason its height increases over the two outside thirds (each 1.05m) to a height of 41cm at the periphery of the table. From there the net describes a downward radius as shown. Although the wing players can come very close to the net, they ("or anything they wear or carry" - ITTF rule 2.10.1.9) must not touch the net assembly during play, as is

the case in the conventional game. Again various designs are possible within the parameters shown [1].



Figure 4: Triples Net Configurations (PATENT APPLIED FOR)

- a. Example of Framed "Clear Net" Construction (half table removed)
- b. Example of Peripherally Adjustable Half-Net Construction

The "three thirds" net height variation means that each player is essentially "in charge" of one-third of the net, and that "quasi-normal" table tennis can be played over the central table and net portion. Apart from the circular table shape, the sweeping and aesthetically pleasing net configuration characterises the physical layout and visual impact of Triples, - and its relatively large net area can be used as even more sponsorship promotion and advertising space than is possible with conventional nets.

Examples of the "composite" and "modular" Triples table assemblies, which themselves can be used in interesting new combinations [1], are shown in Figure 5.

4. The Rules of Triples

Since Triples is simply a new variant of table tennis, all of the basic ITTF rules of conventional table tennis also apply. The extra rules of Triples are simple and logical. Obviously some new features and terms have to be introduced when compared to the conventional games of table tennis. Apart from these some variations to the standard rules are included, aimed specifically at making the game even more exciting.

4.1 The "Service Rally" and "Service Round"

These are new concepts. The "*Triples Service Rally*" consists of *two* shots, the actual service *and* its return. Referring to Figure 1, all services must be delivered from the *Centre Court* i.e. from CCA or CCB, also referred to as the "Server Courts". Each server makes a total of 6 consecutive services, viz. two services to each opponent. These six services constitute one "*Service Round*", as illustrated in Figure 6.



Figure 5: Sample Triples Table Constructions (PATENT APPLIED FOR)

a. Composite b. Modular

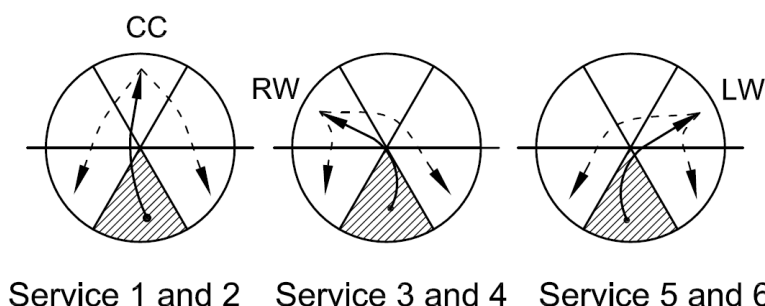


Figure 6: The six Service Rallies in each Service Round

————— Service - - - - - Possible Returns

4.2 Service

During the service the racket must strike the ball behind the table edge and within the hypothetical radial “extensions” behind the table of the left and right Triples lines. The server (in Fig.1 initially 1A), first serves two services to player 1B at CC_B , followed by two services to player 2B at the opposite Right Wing, RW_B , and hence two services to player 3B at the opposite Left Wing, LW_B .

The reason for the six services is twofold. Firstly players are used to serve two services at a time from the conventional game. This feature therefore remains the same, but is simply extended to challenge all 3 players of the opposing team. Secondly, since the possibility of multi-directionality, or “sideways play” is a fundamental property of Triples, this is emphasised straight away by the server having to deliver services not only “straight down the middle” as in the conventional game (although this familiar “conventional” service still starts off the Service Round), but also, and more importantly, to the two Wing Courts. The interpretation of net and line balls during service is standard.

4.3 Return of Service

After the server has made a good service, the receiver must return the ball to *either* of the two wing courts on the opposite side, as per Fig. 6. The receiver can therefore choose to which of the two Wing Courts s/he returns the ball. This means that the wing players in the serving team do not know to whom the service will be returned, and must therefore be alert: all three players of the serving team become immediately "involved". Also the inherently new Triples feature of "lateral" play is fully exploited and stressed not only during the service, but also during its return. The successful execution of the service *and* its return thus provides an "entry ticket" to the main rally for *both* teams – what happens *after* these two introductory shots is entirely up to the players/teams themselves.

Line balls are treated as before, i.e. any ball landing on the respective Triples line is deemed "in". However, since the return of service is a compulsory part of the "prescribed" service action, and contrary to conventional table tennis, any *net ball* during the *return* shot must also be re-played, i.e. *both* the service *and* its return - the whole "Service Rally" - is repeated.

The "Service Rally" hence introduces the game proper. Logically one "Service Round" incorporates 6 service rallies, and also 6 game rallies and hence 6 scored points:

1 Service Round = 6 Service Rallies = 6 game rallies = 6 scored points.

4.4 "Free Play" and the "3-Shot Rule"

After the Service Rally players are free to play the ball back to *anywhere* on the opposing teams table half, and *any member of the opposing team* can then likewise return it to any player/court on the other side. From there onwards there are essentially no restrictions as to *who* plays the ball at any one time, nor *where* it should land, i.e. the *playing order is arbitrary*: any team member can hit/return the ball to anywhere in the other team's field. – This is the "Free Play" phase of Triples. The only qualification to "Free Play" is that any one player cannot play more than three shots in succession. After that another team member must play the ball. This is the Triples "3-Shot" Rule, imposed to ensure balanced participation. If the ball is played by the same player a fourth time *in a row* his/her team loses the point. However, once another player has taken over from the "3-shot-player", i.e. "broken" his/her run, the latter can in turn play again. There is no limit to the number of "3-shot-runs" per player in any rally.

Free Play, as a basic feature of any "real" team sport, is one of the most exciting features of Triples, and a breakaway from the conventional game. - It could even be argued that doubles in table tennis, with its alternating play rule, does not really qualify as a "real" team sport. Even in other two-player team sports such as tennis or badminton such "free play" is a basic prerequisite.

4.5 Player Identification and Team Rotation

The relative positioning of players is important in most team games. This also applies to Triples, where one must not only know and monitor which player occupies what position at any one time, but also strategically allocate the players to the three Triples positions 1, 2, and 3. These numbers ensure proper service sequencing and player rotation, and effective umpiring. Removable bibs are the most effective way for that, as shown in Figure 7.

Whenever a player has completed a Service Round, his/her *team "rotates" clockwise* around its table half by one court, as also indicated in Fig. 7, and the service changes sides. After this "Team Rotation" the other team plays its Service Round, and the process is repeated until all six players have had their Service Rounds.

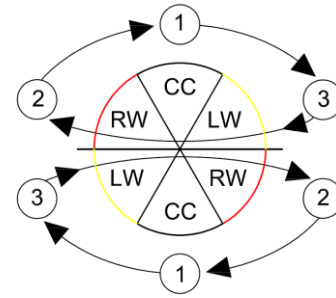


Figure 7: Player Identification and Triples Team Rotations

4.6 The "Triples Cycle" and 31-point "Straight Game"

From this it is seen that Triples play is cyclic, in 36-point "*Triples Cycles*". After each cycle, every player has served twice to, and received two services from, each opponent, and has played from each of the three positions/courts on his/her team's field. After each cycle both teams change sides and take up their initial player positions on the other side. Play then continues until the winning score of 31 is reached with 2 advantage points: the "*Straight Game*". With this cyclic playing pattern, and with every player having served to, and received services from, every opposing player and on both sides, a completely fair and equitable game foundation is established and maintained in Triples. No player is advantaged or disadvantaged in any way by virtue of the rules, environment or game proceedings. The Straight Game rules have been summarised in Table 1.

Playing to a winning score of 31 stresses a fundamental aspect of team games: the necessary stamina and gradual 'excitement buildup' of prolonged player engagement. It also follows the author's 'unified theory' of table tennis, according to which singles are played to 11, doubles to 21, Triples to 31, and 'Quadruples' (which can also be played on the 3.14m table) to 41 points - or to 41 minutes: with such player numbers in a team the game could also be time-based [1].

4.7 "Tie Break" and "Shoot-Out"

In the event of a 30:30 score, i.e. a "close" Triples game, two departures from the conventional rules of table tennis come into play, resulting in a fairer treatment of close game outcomes: the "*Tie Break*". With 60 points played, corresponding to $1\frac{1}{3}$ Triples Cycles, the third players of each team (3A and 3B) have not yet had their second Service Round. The new features, which lead to a number of interesting team tactics [1] are:

- Play must continue *irrespective of scores* until the second 36-point cycle has been completed, so that thereafter each player has also served from each side
- to win the Tie Break, a team must *lead by at least the "Triples Advantage" of three points* (not just two) *at the end* of the twelve Tie Break rallies.

If at the end of the Tie Break phase a score of 36:36 or 37:35 is reached, all player and service combinations have been played, and both teams are back at their starting positions. For a 36:36 score both teams are of course at a completely equal position, whereas for 37:35 the leading team is just "one point away" from winning the game – which will happen *if* they win the next point...

Table 1: Triples Rules Part 1: The “Straight Game” to 31

The basic ITTF laws of conventional table tennis also apply in Triples, with the following modifications:

1. A Triples Team consists of three players numbered 1, 2, 3
2. Both halves of the round Triples table have a Centre Court CC, Right Wing RW, and Left Wing LW
3. All *Services* are delivered from the Centre Court CC
4. Two consecutive services must be delivered to each opposite court: First to CC, then to RW, then to LW. These *six services* constitute a *Service Round*
5. All *Service Returns* must be played to *EITHER of the opposite Wing Courts*
6. The service together with its return constitutes a *Service Rally*. Any net ball during these 2 shots (*also* the return) leads to a replay of the Service Rally.
Note: Apart from this, any line calls, net balls and edge balls are treated in the same way as in conventional table tennis
7. After each Service Rally *Free Play* starts: any player can return any ball to anywhere on the opposite table half. The only restriction during Free Play is a maximum of *three consecutive shots* by any player (the “3-Shot Rule”)
8. Players must be at their *Designated Positions* for the Service Rally only. After this they can play from any position
9. After each Service Round each player of the team that just served moves clockwise to the next court and service changes sides. After this *Team Rotation* the next Service Round starts
10. Six Service Rounds constitute one *Triples Cycle*. After each Triples Cycle teams *change sides*
11. A Triples Game is normally played to 31 points, with the usual 2-point lead: the “Straight Game”.
12. New “Close Game” Rules apply if the score reaches 30:30 – see Part 2

At this crucial stage the even more exciting “Shoot-Out” phase and rules come into force, which essentially give both teams complete freedom in how to play. It begins with the existing score, and ends *as soon as one team gains a lead of 3 points*, or after another 18 rallies have been played. During Shoot-Out the service alternates, but the team decides *who serves when*, with each player serving up to 3 times. Ball placement and player positioning is completely free, teams change sides after 9 points, and, to eliminate chance and player frustration at this crucial stage, *ALL net balls and edge balls* lead to a “let” call and hence *rally replay*: another breakaway from the standard rules.

4.8 The “Draw” and “Golden Triplets” Finish

At the end of the Shoot-Out phase 90 points have been played, and the game should not be prolonged any further. If no 3-point lead has been achieved the score is either 45:45 or 46:44. The fact that both teams have come through the Tie-Break and Shoot-Out phases, and arrived at such a close final score, proves conclusively that the two teams are really “equal”- especially in view of the fact that chance has largely been eliminated towards the end. This is acknowledged in Triples by declaring a *Draw* at this stage, as is the case in other team sports, irrespective of whether the score is 45:45 (a “Straight Draw”) or 46:44 (an “Advantage Draw”). This will typically be the case in pennant matches or ongoing team competitions, where cumulative scores over time determine the teams’ standing. The possibility of a Draw hence brings Triples in line with other team sports.

However, in championship finals and some other instances a single “clear” winner must emerge, so that an alternative and quick finish to the game is needed. The decision as to which alternative is chosen has to be taken by the body organising the event. The simple alternative is to play for the best of three more “golden” points, the three “Golden Triplets”, thereby bringing the maximum total point score in Triples to 93.

Table 2 : Triples Rules Part 2: The "Close Game" Plan and Scoring

13. Tie Break: If both teams score 30 points the "*TIE BREAK*" phase as well as 3-point "*Triples Advantage*" come into effect:
 - a. play must continue for *two more Service Rounds* (12 rallies), irrespective of score
 - b. the game ends if a team *at the end* of the Tie Break phase leads by *3 or more points*
14. Shoot-Out: If at the end of Tie Break the game score is 36:36 or 37:35 the "*SHOOT-OUT*" phase comes into effect. After a *3- minute time-out* break:
 - a. the game is won by the team *first scoring* the 3-point "*Triples Advantage*" lead
 - b. choice of *sides* ("ends") and of *first service*:
 - i. at 36:36 both teams automatically change sides again, and the first service is determined by an umpire - tossed coin.
 - ii. At 37:35 the leading team has choice of side or service, the lagging team choosing the other.
 - c. *service alternates* between teams, changing sides after every rally / scored point. Apart from being delivered from Centre Court, all restrictions on placement of service and service return are waived: play is completely "free".
 - d. the teams decide *who serves when*, with:
 - i. no more than 2 consecutive services per player
 - ii. no more than 3 services per player in total (3 x 6 = 18 points)
 - e. The three consecutive shots limit ("*3-Shot Rule*") still applies
 - f. *ANY net ball or edge ball* during Shoot-Out leads to a "*let*", hence rally replay
 - g. teams *change sides* after 9 points have been scored.
15. Draw: If no winner has emerged at the end of the Shoot-Out Round, a "*DRAW*" is declared and the game ends:
 - i. at 45:45 a "*Straight Draw*"
 - ii. at 46:44 an "*Advantage Draw*".
16. Golden Triplets: If the event or situation calls for a "clear winner" (e.g. championship finals) the "*GOLDEN TRIPLETS*" rule comes into effect, which overrides the DRAW rule and quickly ends the game: Three more final rallies are played for the 3 "*Golden Triplets*" points:
 - a. after a *1-minute time-out* break, play starts from a 0:0 "*Triplets Score*", irrespective of the previous 45:45 or 46:44 score. Shoot-Out rules apply.
 - b. *First service* and choice of *sides* is determined as before:
 - i. At 45:45 both teams automatically change sides again, and the first service is determined by an umpire - tossed coin.
 - ii. At 46:44 the leading team has choice of side or service, the lagging team choosing the other.
 - c. The team scoring 2 out of the 3 "*Triplets points*" wins the game.

Both the final Shoot-Out score as well as the final Triplets score are recorded.

The above has been summarised in the "Close Game" rules shown in Table 2. As an overall guide to Triples play Figure 8 then shows the overall Triples game proceedings in an easy-to-follow flowchart layout.

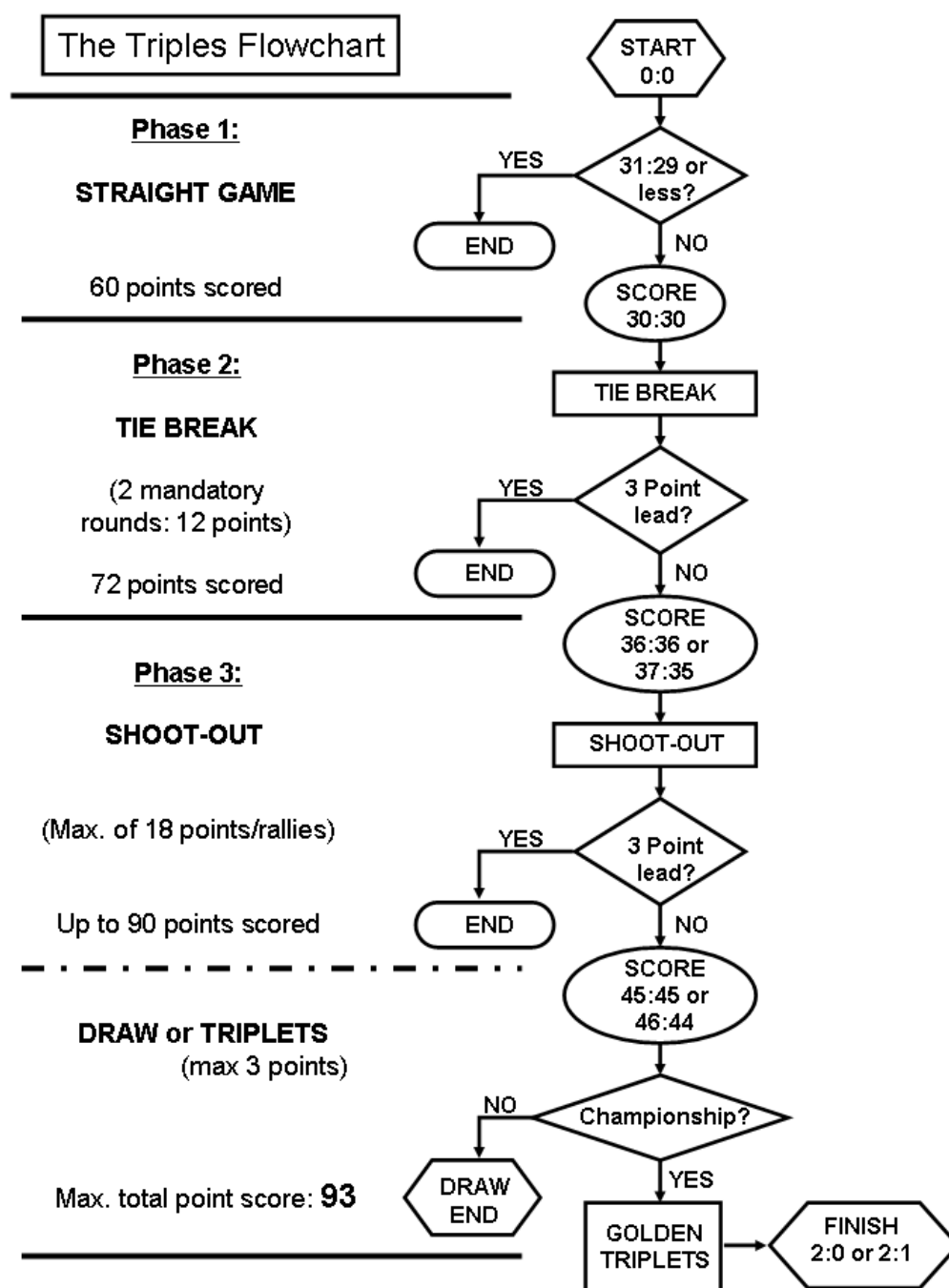


Figure 8: The Triples Flowchart

4.9 Scoring and Umpiring

To facilitate game management and scoring, a Triples scoreboard should, apart from the two scores, show current player positions and Service Round numbers. Since these are prescribed for every single point/rally, they are also included in the score sheets, and help players, umpires and spectators alike to readily follow game proceedings. Examples are given in Figure 9, showing score sheet extracts and their corresponding prototype (flipchart) scoreboard settings during point/rally number 18 in Service Round 3, and number 70 in SR12. Apart from operating the scoreboard, Triples umpires necessarily have to attend to some extra tasks when compared to the standard game. However experience has shown that these can still be managed by a

single person, especially when assisted by electronic scoreboards and displays. Further details and a complete set of score sheets are given in [1].

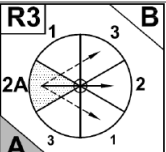
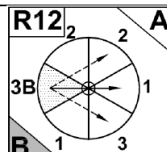
Point No	Player Positions and Round No's	Serv	Rec	Points won by		RUNNING SCORE A : B	Comments					
				A	B							
13 14		2A	2B		:	67 68 69 70 71 72						
15 16	2A		2B		:			1A 1A				
17 18			3B		:				2A		:	
			1B		:				2A		:	
	Team A rotates											
		3B	1A		:	3A 3A	Team B rotates					
			1A		:					:		
			2A		:					:		
			3A		:					:		
		Team B rotates										



Figure 9: Triples Score Sheet Extracts and Scoreboard Settings

5. First Triples Trials

A new game can only be accepted once it has been thoroughly tested and proven in practice. From a conventional table tennis perspective, this applies particularly to the new, unusual and what will initially be perceived as "uncomfortable" aspects of the Triples game. All its rules and regulations were therefore thoroughly tested in practical verification trials, and in fact incorporate various improvements based on feedback from and discussions with players, and on their practical Triples playing experience gained during these trials.

Fourteen players currently playing in regional "A-grade" and "B-grade" table tennis competitions took part, in a series of three 3-hour trials. These started with warm-up sessions using three balls, followed by team formation, player identification using bibs, and hence playing and timing of all three game phases as per Fig. 8. Players were asked to critically assess the equipment and all the rules, with particular emphasis on their use in serious competitive play. The new scoring and umpiring aspects, and the practicality of the Triples score sheets were also verified. Sample photos taken during the 'warm-up' and 'serious competition' phases of these trials are shown in Figure 10.

Feedback was obtained during de-briefing sessions and from a 22-question evaluation form, made up of 10 general questions and 12 ratings (bad/good/excellent). These and their consolidated responses are shown in Table 3 and Figure 11, respectively. It can be seen that player reactions were generally very positive.



Figure 10: Action shots from 'Warm-up' and 'Competition Triples' trials

Apart from the supportive comments summarised in Table 3, the quantified player assessments of all the specific new 'Triples concepts' shown in Fig. 11 especially support that. All the rules were rated as 'good' or 'excellent', with no 'bad' entries,

except for the introduction of a “Draw” outcome (No. 20), and re-starting a rally (or ‘let’ call) in case of a net or edge ball occurring *anywhere* during a Shoot-Out rally (No. 22). The latter two also included an - albeit minor - ‘bad’ assessment, indicating that these two concepts were simply ‘too radical’ for some players – at this point in time. With the future detection of net/edge/line balls in table tennis using electronic sensors, this resistance is likely to change [11, 12].

Table 3: Trial Feedback: General Questions 1-10

	Question	Response Commentary/Descriptors
1	Your first impression of the <i>Triples Setup (table/net)</i>	Surprise – fascinating – novel – excellent – tops – interesting
2	How did you feel about playing with <i>3 Players</i> ‘in a semicircle’	Comfortable – not cramped – not lost – no problem – enjoyable
3	Your general reaction to the <i>New Rules</i>	Easy to follow and comprehend – well thought out – will take time to get used to – fair – greater participation
4	What do you think of “ <i>Free Play</i> ”	Best part of the game – needs team understanding – exciting – makes you think – players aware of each other
5	Did you have problems with <i>Game Proceedings</i>	No – scoreboard helpful – challenging – easy to follow and understand – takes time to adjust
6	Did you really feel part of a coherent Table Tennis <i>Team</i>	Yes: 71% (10 players - <i>others confessed to being ingrained individualists...</i>) – ‘this will improve with practice’ ...
7	Could Triples succeed as a <i>Serious Competition Game</i>	Yes: 86% (12 players). Others ‘maybe’. ‘definitely incorporates all competitive elements’...
8	What feature did you like <i>least</i> about Triples	Initial lack of teamwork – the net – lack of control as a team player – getting used to team characteristics
9	What feature did you like <i>most</i> about Triples	Free play – player rotations – the 3-shot rule – scope for tactics – thrives on team communication – the round table
10	Any other <i>Comments</i> :	Team communication a prerequisite – play can be more physical and tactical – ‘opens new horizons for table tennis’

11. The 2-shot “Service Rally” concept
12. The “Service Return to Wings Only” rule
13. The 6-service “Service Round” concept
14. The “Player Rotation” system
15. The “3-Shot Limit” rule
16. Playing to 31 points (“Straight Game”)
17. The 3-point “Triples Advantage”
18. The “Tie-Break” system
19. The “Shoot-Out” (S/O) system
20. The possibility of a “Draw” result
21. The “Golden Triplets” rule
22. S/O net/edge ball full rally replay

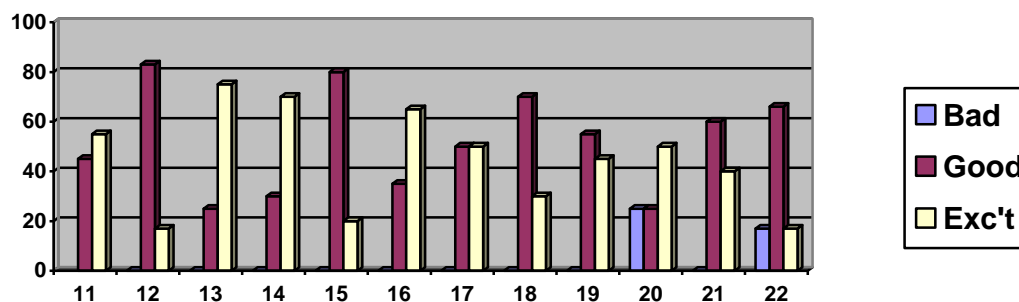


Figure 11: Trial Feedback: Percentage Responses to Questions 11-22

It can be concluded from these trials that Triples, on the round table and with the rules described, not only meets the approval of experienced table tennis players, but can potentially qualify as a serious competitive version of table tennis: players enjoyed playing 'their game' as part of a real TEAM. Based on the collective experience and wisdom of these trial players (and that of the author) it therefore appears safe to claim that Triples can join the ranks of singles and doubles games as another serious table tennis competition game. Suggestions on how this might be done will now be briefly indicated.

6. Combination Team Events: Singles, Doubles, Triples

It could be argued that the ultimate test to determine conclusively which of two teams really is the better, is to have them compete on an individual *as well as* a team basis, with a combination of singles, doubles and Triples matches counting towards the final match outcome. Various possibilities exist as to how, and how many, of each type should be played to make up a "*Combination Match*", and still complete the event within an acceptable time frame. Also, the character of such Combination Matches is influenced by the relative weightings for each of its three components. Some possibilities are shown in Table 4 [1]. Of the three alternatives shown the 1-5-12 weighting system tends to give the best overall balance, and best represents the player effort and team contribution from each of the three game types. For consistency the overall point total for the match has been taken as 31 – obviously other options exist.

Table 4: Comparison of Weighting in Combination Team Events

Game	Weighting			Matches played	Contribution to 31 points		
	1-3-16	1-4-14	1-5-12		1-3-16	1-4-14	1-5-12
Each singles	1	1	1	9	9	9	9
Each doubles	3	4	5	2	6	8	10
Triples	16	14	12	1	16	14	12

Although all of the matches shown in Table 4 could be played on one re-configurable "composite table" as per Fig. 5, a preferable ('low-cost') solution is to use another conventional table with it. Table 5 shows such a 'two-table' team match schedule, which should typically take 3 to 4 hours, i.e. half a day or one evening, to complete. The Triples match should preferably consist of the best of 3 Triples games. Naturally a (round) Triples table could also be used, together with two standard tables.

Table 5: Two-table Team Match Schedule

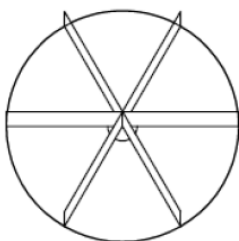
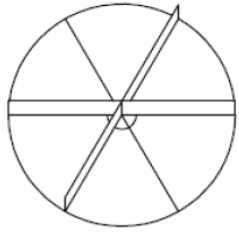
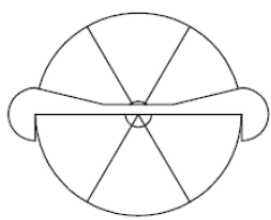
Match Part	Approx. Duration	Player Activity						Table 1 (Conventional)	Table 2 (Composite)
		1A	2A	3A	1B	2B	3B		
1	45 min	1	1	1	1	1	1	1A-1B	2A3A-2B3B
		--	1	1	--	1	1	2A-2B	3A-3B
2	45 min	1	--	1	1	1	--	1A-2B	3A-1B
		1	1	1	1	1	1	2A-3B	1A3A-1B2B
3	1 hour	1	--	--	--	--	1	1A-3B	Triples conversion to round table
		--	1	--	1	--	--	2A-1B	
		--	--	1	--	1	--	3A-2B	
4 Triples	1 hour	1	1	1	1	1	1	vacant	1A2A3A v. 1B2B3B
Totals	3 ½ hrs	5	5	6	5	6	5	9 Singles 2 Doubles 1 Triples	

6.1 Round-table Modifications

In fact *all* of the matches shown in Tables 4 and 5 could be played on *one* Triples table. Provided some of the conventional rules of table tennis are relaxed – such as playing on ‘triangular courts’ - the feasibility of playing more than one game of table tennis simultaneously on one table has been proven before. Figure 12 shows one example, with three singles games being played simultaneously [8, 1]. One can therefore schedule the complete team event on one round Triples table, as shown in Table 6. Apart from equipment savings, the advantages of this ‘modified’ team event are that players are engaged continuously, and that every player plays an equal number of matches, i.e. six.


Figure 12 : Three Simultaneous Singles Matches

Table 6: Modified Combination Team Event Schedule

Match Phase	Net / Ball Arrangement	Matches	Playing Schedule	A 1 2 3	B 1 2 3
1: SINGLES	6 low half-nets 3 balls 	Round 1			
		S1	1A – 1B	1	1
		S2	2A – 2B	1	1
		S3	3A – 3B	1	1
		Round 2			
		S4	1A – 2B	1	1
2: MIXED MODE DOUBLES and SINGLES	4 low half-nets 2 balls 	Round 3			
		D1	2A3A-1B2B	1 1	1 1
		S7	1A – 3B	1	1
		Round 4			
		D2	1A3A-2B3B	1 1	1 1
		S8	2A – 1B	1	1
3: TRIPLES	1 Triples net 1 ball 	Round 5			
		D3	1A2A-1B3B	1 1	1 1
		S9	3A – 2B	1	1
		Round 6			
		T	1A2A3A v. 1B2B3B	1 1 1	1 1 1
		Event Totals: 31 points		9 Singles : 9 points 3 Doubles : 9 points 1 Triples : 13 points	6 6 6

6.2 Triples in Major Table Tennis Events?

Having established the practical feasibility of Triples, it may be appropriate to consider its possible inclusion into major and/or international table tennis *team* events. First suggestions are shown in Table 7. Some such events, the number of players, and their present composition of singles and doubles matches are listed in the first four columns. The last three then contain the possible addition of Triples matches and the likely effect of that on the overall and winning points scores. A hypothetical and 'pure' "*New Olympics Team Event*" has been added, with teams of three players playing for the best of 7 Triples games.

Team match scenarios such as these are just examples of the many possibilities, in terms of new tactics, match structures and match organisation, opened up by the Triples game and the use of the round table. Many more are feasible and will no doubt be developed and tested in the future.

Table 7: Possible Triples-augmented Team Events

Event	No. of Players in Team	Singles Matches (max)	Doubles Matches	Triples Matches	Total Points	Winning Point Score
Corbillon Cup	(4)	4	1	1*	7	4
Swaythling Cup	3	9	-	1*	11	6
Modified Swaythling Cup	3	6	1	1*	9	5
Swedish League	3	9	1	1**	13	7
World Team Championships	3	5 → 4	-	1**	7	4
European Champ. League	3	5	-	1*	7	4
German Bundesliga	6	12	4	3 (1 game)	19	9
Olympics 2008	3	4	1	1*	7	4
New Olympics Team Event	3	-	-	1 7 games	7	4 games
Typical Pennant Competitions	3	6	2	1**	11	6

* Triples match counts double **Triples match counts triple

7. Conclusion and Outlook

The objective of this paper was to introduce a new table tennis game for teams of 3 players, and to point out the accompanying parent text for full details. Triples for the first time in history allows table tennis to be played as a true team sport. Only its main elements have been presented here. The main text not only provides all other necessary details, but also discusses further possibilities of the game and its equipment, limited only by one's imagination – for example, the use of the Triples sectors in a "*Table Tennis Hurdles Race*", or using the standard Triples table for "*Quadruples*" [1]. Both these are shown in Figure 13. It is hoped that collectively this paper and book will stimulate the table tennis world to test and hopefully embrace the new game, en route "*to an even more vibrant sport*" [13]. The author now invites comment, whether positive or negative, and looks forward to lively discussion – and to seeing table tennis Triples played in future Olympic Games....

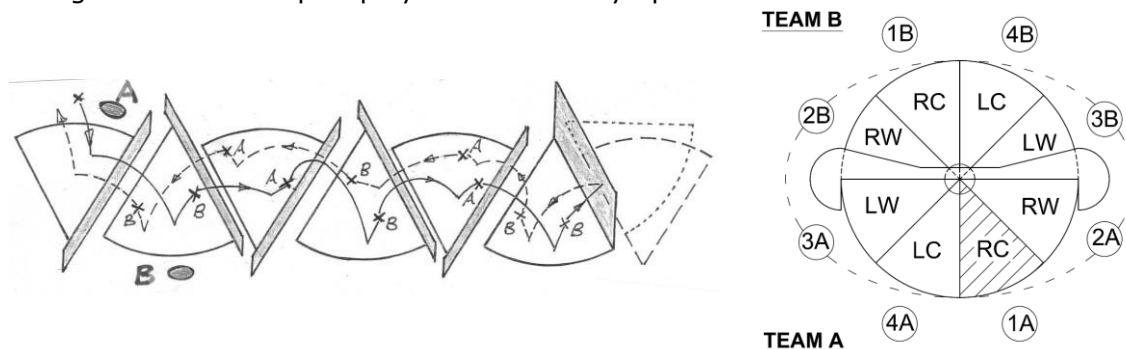


Figure 13 : Triples extensions: – "*Table Tennis Hurdles*" and "*Quadruples*" [1]

8. References

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9. Acknowledgement

The author thanks the ITTF and his test players for all the support given to this project.